USER MANUAL

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V1.03

Code Cap 10 & IRCommander

PC Control of Audio Visual Systems

24, rue Jacques Ibert
92300 Levallois-Perret - France
S.A.R.L. au capital de 20 000 euros
SIRET 440 545 903 00013 / 516 J

corvo TECHNOLOGY

Tel. 33 1 47 59 50 05
Fax 33 1 47 59 50 33
http://www.corvo.com
E-mail : corvo@corvo.com

Introduction

IRC (IRCommander) allows the user to create a virtual IR (Infra-red) remote control keypad on a PC running Microsoft Windows. It must be used with the Corvo Code-Cap 10 interface hardware device, which learns, stores and emits IR codes through mini-emitters attached to the equipment being controlled.

The virtual keypad features :

- **50 zones,** each consisting of 9 source keys, initially called S1 though S4, any 9 of which can be included in the active layout. These keys, like all others, can emit an IR command or macro (sequence of IR commands) but they also can cause all the other command keys to change to a new keypad layout, which is specific to the source device being selected. These source-specific layouts are defined as **Source Keypad Layout** (SKL).
- 41 **command keys** that are specific to the selected source. Each key can store and emit an IR command or macro.
- A **marquis message** band, which displays permanently or momentarily a text message that corresponds to the key that is pressed. The **message** text is user-programmable for each key.
- A **Configure** command which opens the IRC menu allowing all aspects of setting-up the application to the user's specific requirements.
- A background image to the keypad called a **skin**. Under the option section of the configure menu the user can select one of four background images. Also additional background images can be created by the user and then made available by placing them in the skins directory.

IRC features include :

- Each keycap can have either a user-defined text or image. Text is entered from the PC keyboard or from the text user-assigned to the IR code associated with the key. Images can be created by the user from any photo or drawing program and then stored in the Image directory.
- In addition to the marquis message, each key can have a tool-tip text, which displays when the mouse points to the key. This message can be the same or different than the marquis message.
- All the IR codes, keycap texts, keycap images and IR output information for a given device, DVD player for example, can be stored as an SKL directory in the PC for use in other IRCommander applications.
- A complete IRCommander set-up defined as a **Remote Commander Layout (RCL)** can also be stored as an RCL directory to duplicate and safeguard the set-up.
- Both SKL directories and RCL directories can be freely imported and exported from one PC to another.
- Macros can be created, with programmable time delays between commands, for use with any key.
- Only the active RCL and its SKLs are loaded to the Code-Cap 10, so in practice capacity is limited only by the size of the PC hard drive.
- A given RCL can contain as many as 50 zone configurations, each with 9 source keys.

- IR codes for specific devices can be learned from the original remote control of the device or taken from libraries as they become available.
- IR output is channeled to four separate IR ports on the Code-Cap 10. The output from any key can be individually programmed to activate any combination of these output ports. This feature overcomes the age-old problem of controlling several identical machines, which respond to the same IR codes.
- Each IR command can be programmed to repeat as long as the key is "pressed" or to emit the code only once. For example, pressing the volume button would keep repeating the code until the mouse click key is lifted whereas selecting the number key "2" would only send the code once.
- Communications with the PC can be set to any available Comm port.
- Key caps can be made invisible so only essential keys for a given SKL remain visible. This makes for varied, clear layouts for each SKL. Also each source key can be set to be invisible when not required.

System Requirements

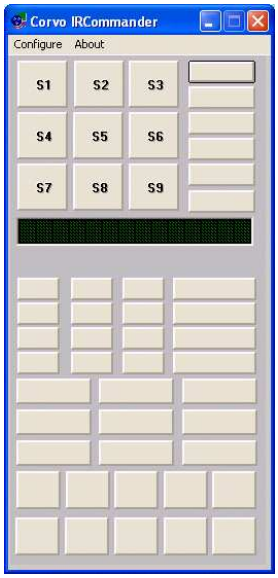
1. 15 MB of free hard drive capacity for program installation.
2. A minimum of 1 MB of hard drive capacity for user data.
3. Windows 98, Win ME, Win NT or Win 2000 operating system.
4. A free communications port.
5. A CRT monitor capable of displaying at least 800x600 images.
6. A CPU speed of at least 120 MHz.

Backward Compatibility (previous IRCommander Users Only)

Evaluation of the V1.00 and Beta Test Software made it necessary to modify a number of important coding procedures to achieve a much improved result in terms of operational features and stability. Regretfully, these modifications have the effect of making IR Code learning, SKLs and RCLs incompatible between Version 1.0 and the present version 1.03. Do not be surprised if programming and code learning done with the 1.00 software will not work properly with the current version 1.03.

Installation

1. Insert CD.
2. Select My Computer and CD Rom Drive.
3. Double click on Setup and follow screen instructions after selecting folder with the Windows operating system you are using.
4. If desired create a shortcut to IRCommander and place it on the desktop.
5. In the IRCommander directory located under (Installation directory)/ Programs Files, double click the BuildDirs.exe file. This is a self-extracting zip file which when finished completes the program installation. The program creates the necessary directories and sub directories required for proper operation of the IRCommander software.
6. The IRCommander directory should now contain the following sub-directories and files :
   (installation directory) /IRCommander
   - /IRCommander.doc
   - /export
   - /images



- /skins
- keys.txt
- rebuild DB.bat
- ASCIIKey.txt
- \BuilDirs.exe
- IRCommander.exe
- Lic.dat
- License.dat
- Read_Me_First.txt
- ST6unst.log
- System.ldb
- System.mdb
- SystemBlank.mdb

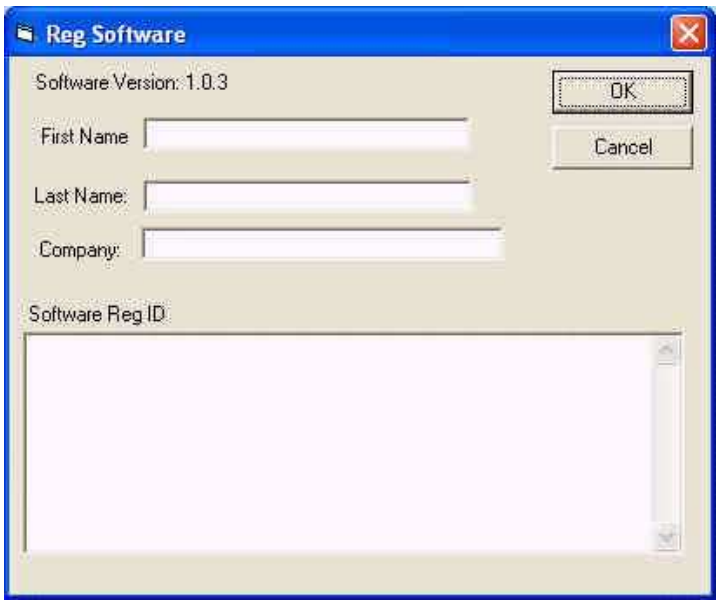
7. IRCommander can now be opened by double clicking its shortcut icon on the desktop (if one was created) or by selecting it from the windows programs menu from the start bar.

Software Registration Procedure

Important : You must register your copy of IRC software, failing that the application will not run at the end of a 15-day trial period beginning on the date you first installed it.
The registration procedure is as follows :

- On the IRC operating screen click “About” and then “Register Software”.
- Type in the requested information for “Name”, “Last Name” and “Company”.
- Note the “Registration Number” as it appears on the screen. The “Unlock code” is left blank for the moment.
- Forward the information you typed and the Registration Number to Corvo By fax or preferably e-mail.
- Corvo will then supply to you the Unlock code which must be pasted or typed in the “Unlock Code” box. If done successfully, the software is now registered as stated at the top of the screen.

Please contact Corvo Technology if you require assistance.



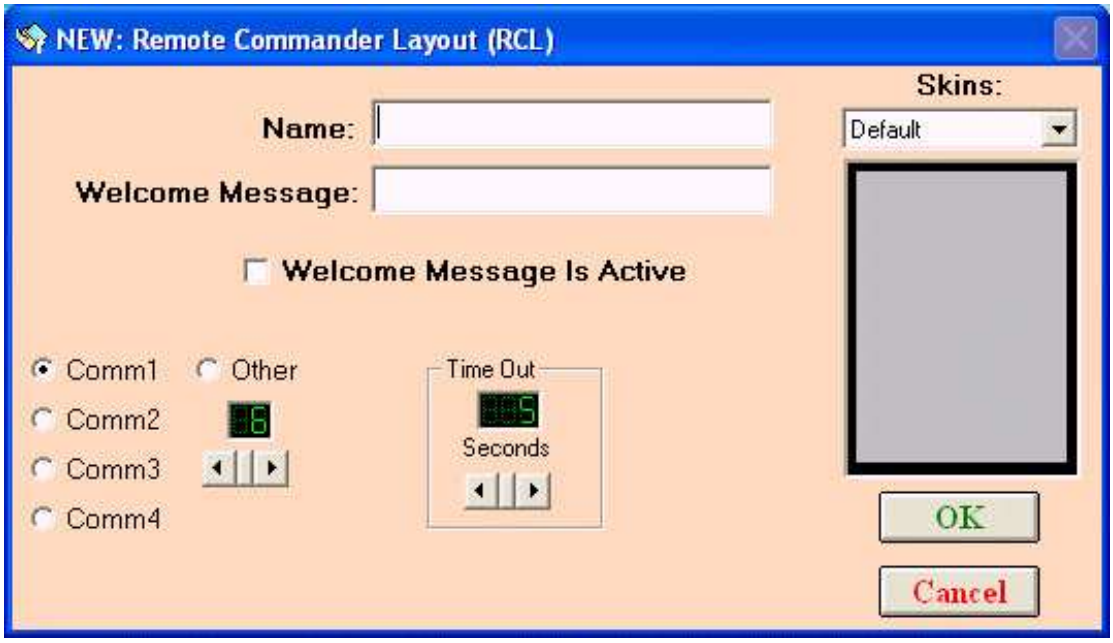
Configuring IRC to user requirements:

IRC is delivered with all key-caps un-programmed except for the text S1 to S9 on the default source selector keys. To make the application useful, it must be configured using the modules of the Configure command which are described as follows:

The IRCommander is configured with a default RCL and SKL called **default.RCL** and **default.SKL**. The IRCommander could be easily configured using the default RCL and SKL, however it is recommended that you create a custom, user defined RCL and SKLs. This will make it easier to export and import them later as default RCLs and SKLs cannot be imported. They can however be exported and renamed.

Creating a RCL :

1. From the configure menu select "New Remote Commander Layout"
2. The "NEW: Remote Commander Layout (RCL) form will be displayed.

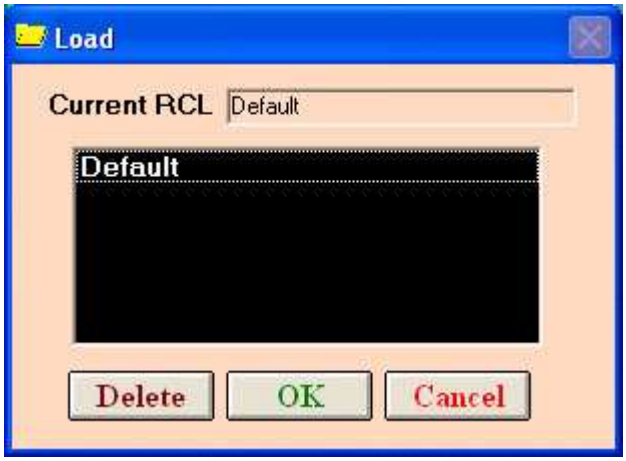


3. Enter a name to refer to this RCL. The name must be unique relative to all other RCLs in the database. The name can be any combination of letters and numbers up to a maximum of 50 characters. No special characters should be used.
4. The Welcome message is optional. If desired a welcome message can be up to 100 characters in length.
5. If it is desired to have the welcome message display on startup then **the "Welcome Message Is Active"** check box must be selected.
6. Select the communications port desired by clicking on the radio button corresponding to the desired port number. The port number selected must be recognized by windows and not in use by any other program. The default is comm. 1.
7. Select the desired time out. The default is 5 seconds. The time out is the amount of time that will be allowed when learning commands before the process is abandoned.
8. Lastly if desired you may select a background skin.

9. Click OK to create and select the new RCL or click Cancel to abort. Once OK is selected the new RCL will become the active RCL. The previous RCL will no longer be active but will still be available for selection later if desired.
10. The newly created RCL is now ready for configuring.

Open existing RCL

1. From the configure drop down menu select "Open Remote Commander Layout"
2. The "Load" form will be displayed. Also the current RCL in use will be displayed along with a list of available RCLs.



3. To load an available RCL either double click on the RCL name in the list or highlight the RCL name desired and click the OK button. The RCL selected and all its SKLs will be downloaded along with all IR codes to the Code Cap 10.
4. Alternately you can click the Cancel button which will close the form without changing the current RCL.

Note: RCLs can be deleted from the the "Load" form by selecting the desired RCL to remove and click the Delete button. This will **only** delete the RCL and not the SKLs assigned to the RCL. SKLs can be deleted using the "Layout Manager" form discussed later.

Warning: RCLs deleted are deleted permanently and cannot be undeleted!

Configuring key layout

The configuration of layouts and the assigning of IR commands is done using the Layout Manager. To open the Layout Manager select from the configure menu "Layout Editor". This will open the Layout Manager form as shown below.

It should be noted that the name of the current RCL, which you will be editing, appears on the top line of this menu.

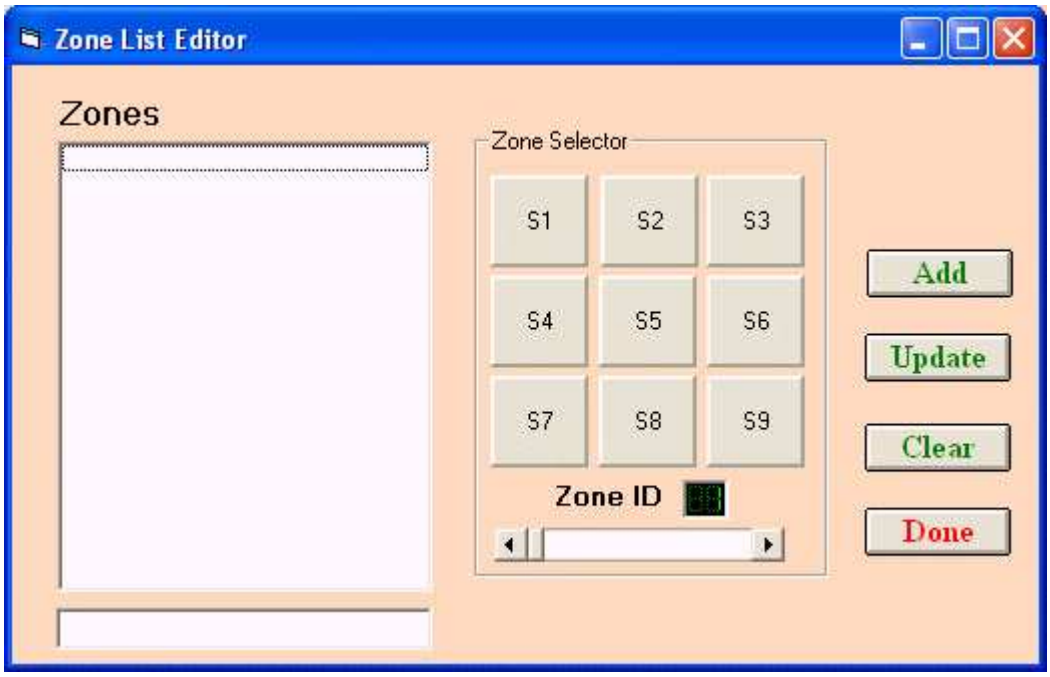
Zones : What they are and How to Use Them

In the Layout Manager screen, just under the left lower corner of the source selector keys is a "Zone" button. This allow selection of a set of 9 source keys called a "Zone". Theoretically, it is possible to have access to 50 zones (which means 450 source keys). The source keys are numbered in groups of 9 keys from S0 to S8 for Zone 1 and S441 to S449 for Zone 50.

Each Zone can receive a Zone Name by first selecting the zone with the horizontal cursor, typing its name in the lower left hand box and clicking “Add”. The named zones now appear in a list in the Zones box.

By selecting a zone and clicking on “Clear” the zone is eliminated from the list of defined zones. By selecting a zone and editing the name of that zone in the lower editing box and then clicking on “update”, the name of the zone is changed to the new name in the Zones drop-down menu. When you have finished editing the zone menu, clicking on “Done” returns you to the main layout editor screen. The drop-down menu next to the “Zone button now contains the names of all the zones you edited.

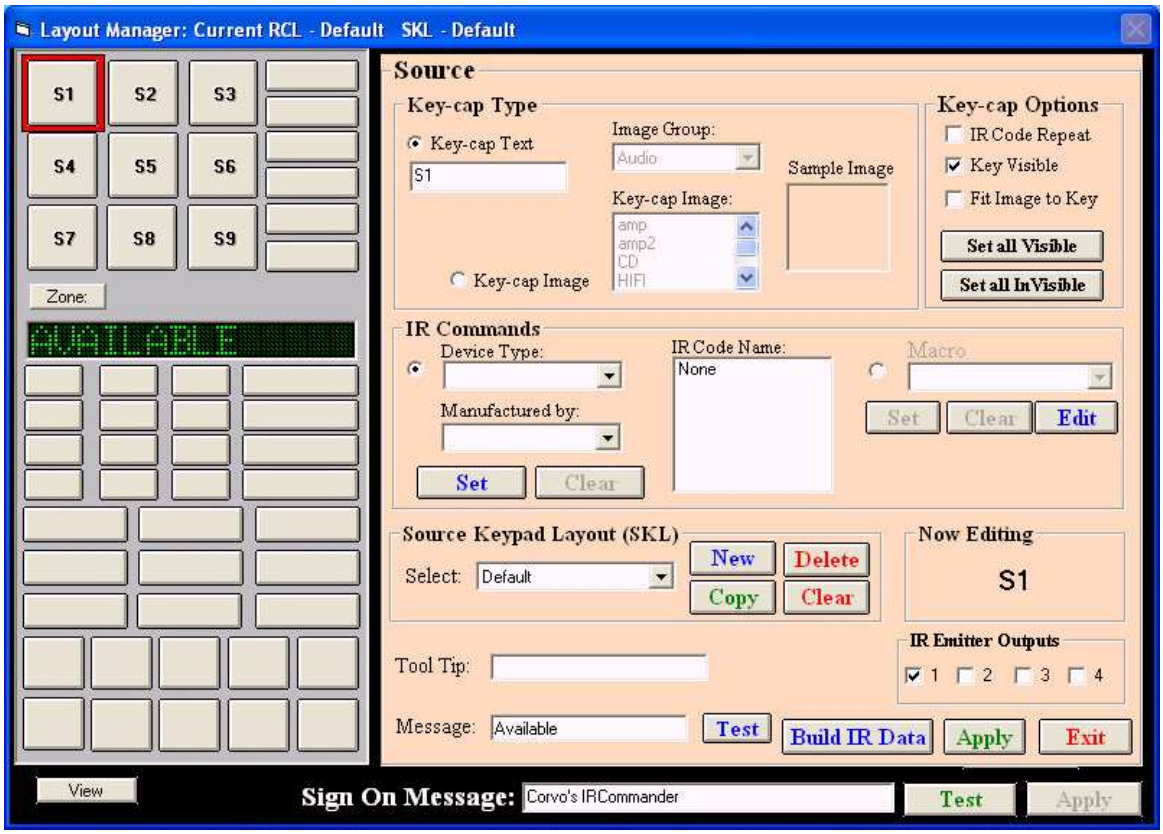
The use of this feature is that many (50) different configurations, for example for different rooms in a multi-room installation, can be operated with the same RCL. Each zone can contain the sources (SKL) layouts for that zone. With appropriate I/R distribution wiring to each zone, all zones can be controlled from a single location. When you return to the operating screen the zones you have edited can be directly selected with the “Zone” drop-down menu.



Configuring Source Key Buttons

1. Double-click on a source key to be configured. The source key configure panel will be displayed.

2. Select the Source Keypad Layout (SKL) to be assigned from the drop-down menu or crate a new one with the New Key typing the SKL name. It is also possible to copy an existing SKL giving it a new name. This is a powerful tool in that an existing SKL may be almost suited with only minor changes which avoids the trouble of completely creating a new SKL.



3. Fill in the boxes with the desired Key information.

- **Key-Cap Text** : If selected, (dot in middle of button), the key-cap will show the text you type in the box below the button. As you type the text first appears in the text box. When you double-click the text, the text also appears on the Keycap. If you select an IR Code for the key, the name you assigned to that code in the IR Database Manager will automatically be assigned to the Keycap. Keeping this in mind, the name assigned to the codes when learning them should be of a suitable number of characters to fit on the Keycap. It is for course possible to change the Keycap text using the keyboard.
- **Key-Cap Image** : When selected, the user can place an image on the key-cap. This image is stored in the / Images directory and in image group sub-directories. These Image Group names can be user modified or supplemented at any time. Any valid Image Group sub-directory or Key-Cap Image can selected with the two drop-down menus. When selected the image appears immediately on the key-cap. A preview image appears in the Sample Image box. The method of creating suitable images is contained in Annex A : Key-Cap Image Preparation.
- **IR Code Repeat** : Determines whether the IR code will be transmitted just one time (box unchecked) or repeatedly, as long as the mouse key is held down (box checked).

- **Key Visible** : A key can be made invisible whether or not it has IR or Key-Cap information programmed. In certain SKLs, not all keys are required so this function allows a cleaner layout of only the active keys. A key which has been made invisible (box un-checked), will show the text **X-Vis** on the layout manager screen. When leaving the layout manager and returning to the operating RCL screen the key will become invisible. The key can be again made visible at any time by checking the Key Visible box.
- **Fit Image to Key** : A graphic utility which, when checked, will adjust the height and width of the image to fit the Key-Cap size.
- **Set All Visible** : Makes all keys visible
- **Set All Invisible** : Makes all keys invisible

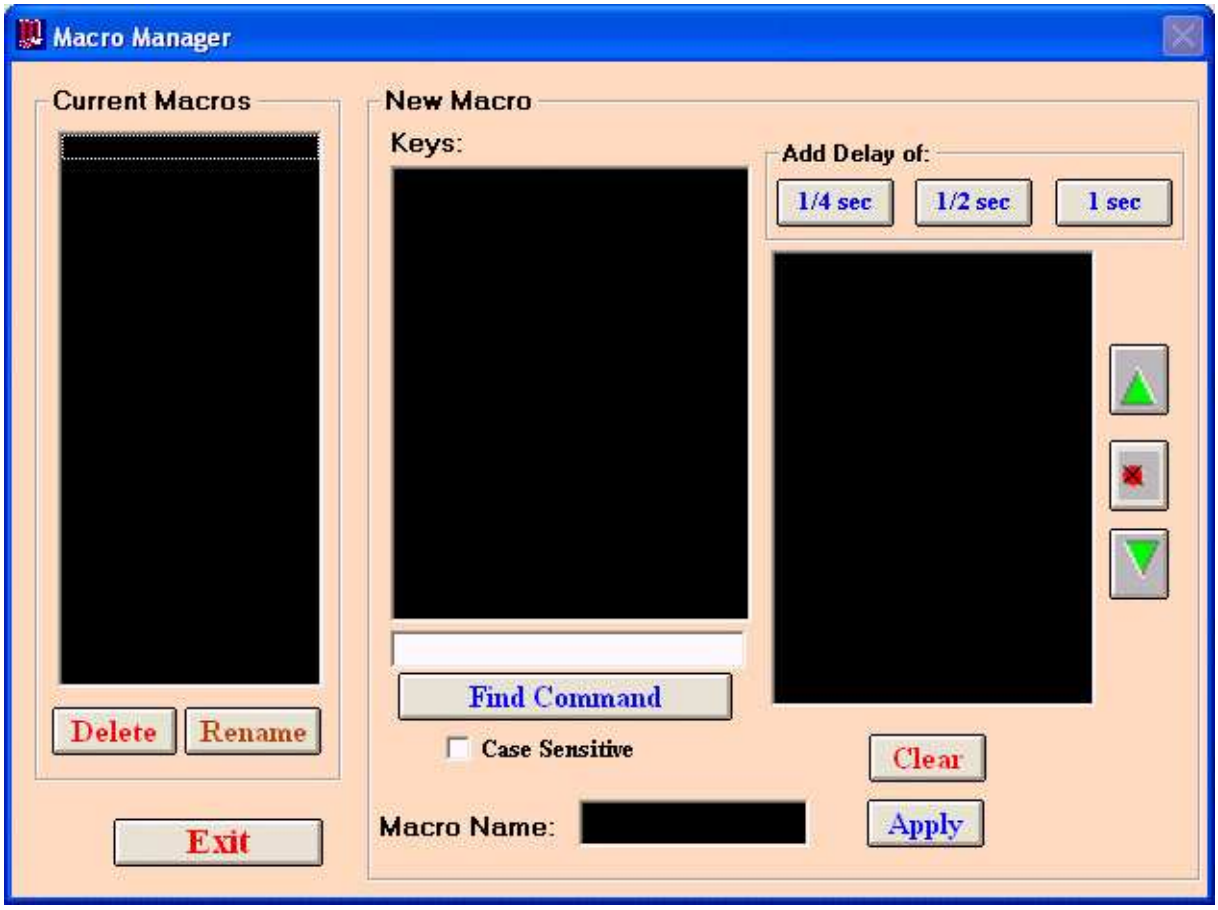
4. Assign IR commands

- The first choice to be made in the IR Command section of the menu is whether it is intended to program a single IR code or a macro (sequence of IR codes). The button on the left under IR Command is for single IR codes whereas the button under the word Macro selects programming a macro.
- **For a single IR code**: Assuming IR codes have been learned in the IR Database Manager (discussed below), the Device Type and Manufactured by lists allow selection of the list of IR codes previously learned for a given device (Philips DVD player, for example). These IR codes appear in the IR Code Name box. Selecting a code and then clicking on Set associates that IR code with the key being programmed. A key that already contains a code will have the Clear button active whereas an un-programmed key will have the Set key active. Pressing Clear will remove the IR code and make the key available to receive a new IR code using the Set button. Also to help prevent confusion the text of the button will also be cleared. As a short cut to assigning a name and IR code to a key: You may double click the IRCode in the list. The code will be added assigned to the key and the text of the IRCode will also be added to the key cap.

Macros

1. Build Macros

Pressing the macro button will give access to the macro selection and editing functions. To edit a macro, press the Edit button. In the center box of the Macro Manager screen a list of all keys programmed with IR codes appears so they may be included in the macro being edited. Double-clicking on one of the available key names places it in the chronological list of commands to be included in the macro. Time delays may be added between commands by clicking on one or more of the Add Delay of buttons to accumulate the desired total time delay. By clicking on a command in the macro list (right hand box), this command can be moved forward or backwards in the chronological order, by using the up and down arrow buttons. A code can be deleted from the macro sequence using the "X" button. When the macro has been properly configured, give it a name in the Macro Name box and press Apply. Leave the Macro Manager menu by pressing Exit, which returns you to the Layout Manager menu. Press the Macro button and then the down arrow on the macro list box. The macro you have just edited/created is in the list. Selecting it assigns that macro to the key being programmed. An assigned macro can be changed by first pressing Clear and then selecting a new macro from the list or editing a new macro as described above. Also note that when assigning macros in the above manner the text of the macro is added to the key cap for you.



2. Unused Codes in a Macro

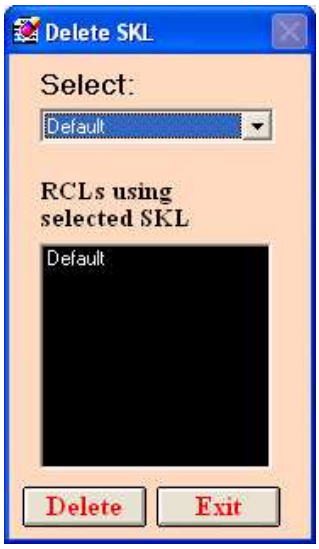
You may whish to include codes in a macro that are not used individually in any of the SKLs. You simply create these commands in unused buttons of one of the SKLs but make the key for that command invisible in the SKL. You might also create an SKL just for this purpose (as there are 450 source keys available).

Checking for programmed keys.

The **View** button located at the bottom left of the **Layout Editor** screen is a useful tool for visualizing all keys that have already been programmed in the current SKL.

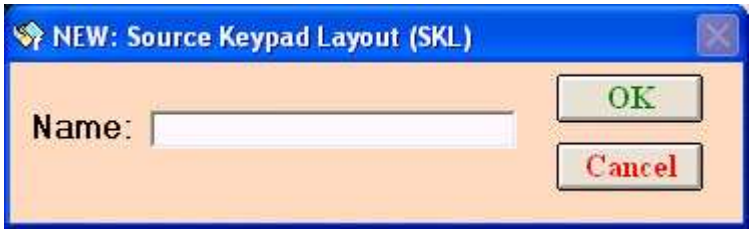
SKLs

- **Source Keypad Layout (SKL)** : The SKL is another important feature of the application. It allows the user to memorize and name all aspects of the layout for a given source. This includes the keys which are visible, their key-cap text or image, the IR code or macro and the IR output parameters. Furthermore, the SKL is a directory which can be imported and exported freely as described below. Here are some applications :

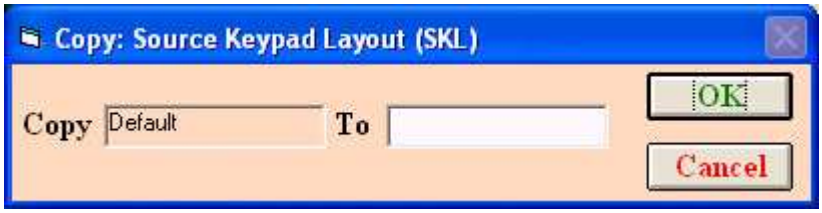


    - When programming a new source device very similar, or even identical, to one previously programmed, one begins by selecting the previous SKL, copying it and then making any changes before finally saving it with a new name.
    - An SKL from another RCL can be imported and used in the current RCL. SKL's can be deleted with the Delete button or cleared with the Clear button.

5. Creating a new custom SKL.
    - In the Source Keypad Layout (SKL) section. Click the New button.
    - Enter a unique name for the SKL. An SKL can contain a maximum of 25 characters. An SKL name cannot contain special characters.



6. Copying a SKL
    - In the Source Keypad Layout (SKL) section. Click the **Copy** button.
    - Enter a new name for the copy. All configuration information including assigned IR Commands will be copied to the new SKL.

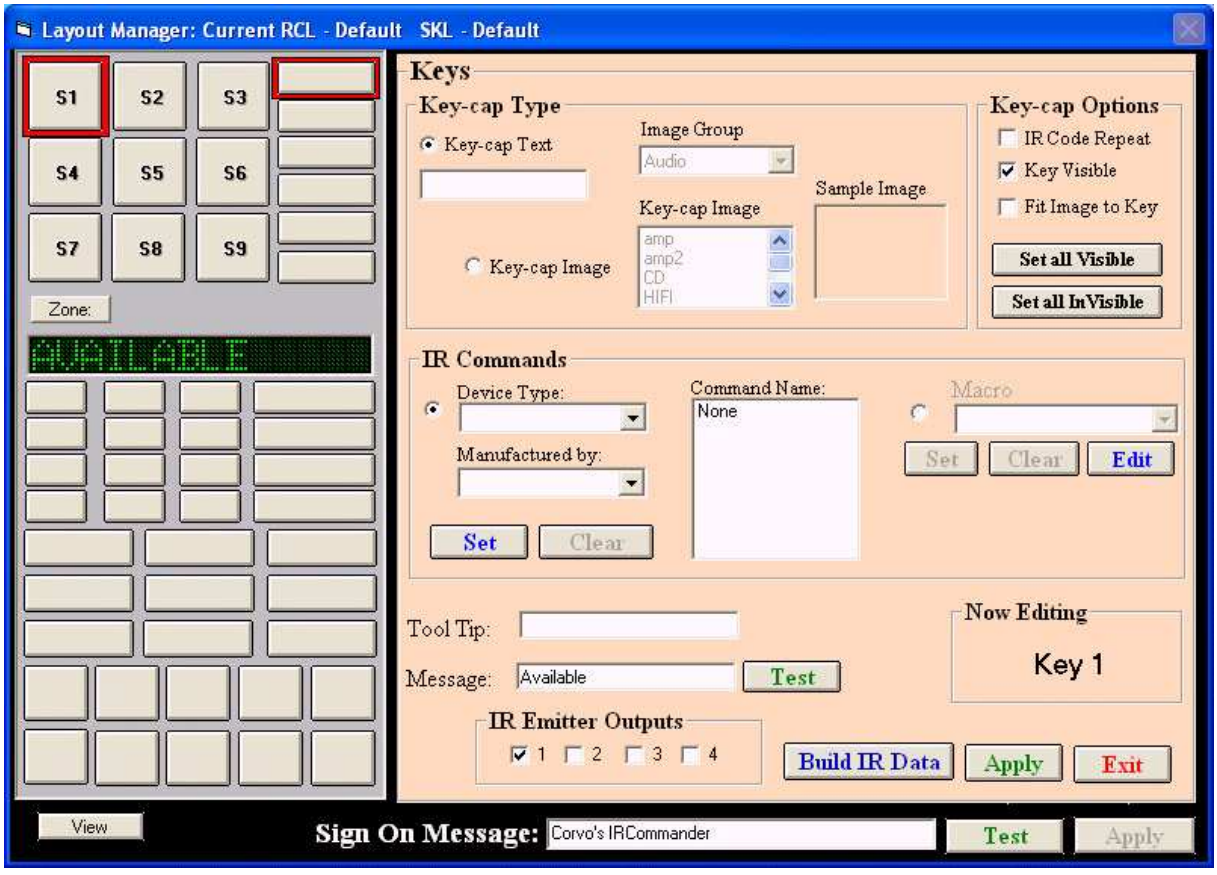


7. **Now Editing**: An information box to remind the user the name of the key currently being edited.

8. **Tool Tip Texts**: This text, to be typed in the Tool Tip: box, will appear when the mouse pointer is over a key-cap. It can be thought of as a reminder to the user of what the key will do.
9. **Marquis Text**: This text will float by on the marquis message screen. The user types the message (in place of the default text “Available”). Pressing the Test button causes the message to appear, as it will look in actual operation. A message text that is shorter in length than the marquis message screen will remain visible until another key is pressed. A message that is too long for the marquis message screen will float by and leave the screen empty.
10. **IR Emitter Outputs**: The Code-Cap 10 has four independent IR outputs that can be separately addressed by checking/un-checking the four boxes marked 1, 2, 3 and 4. This is an extremely useful feature in large systems where it is essential to send IR output only where it is wanted, for example, controlling identical devices that respond to the same IR codes. Any combination of multiple or single outputs can be programmed with this selection.
11. **Apply**: Saves the programmed information for each key. When programming several keys, each time a new key is selected for programming the previous key’s programming is automatically saved. If you fail to press the Apply button before pressing Exit, you will only lose the information on the last key programmed.
12. **Build IR Data** : This button allows transfer of the programmed IR codes and macros to the Code-Cap 10. Use when all keys in the SKL have been programmed with their IR codes. Forgetting to press this button will result in the programmed IR codes not be transferred to the Code-Cap 10. You can return to the Layout Manager and press the Build IR Data key followed by Exit at any time to correct this error.
13. **Exit** : Return to the operational RCL screen.

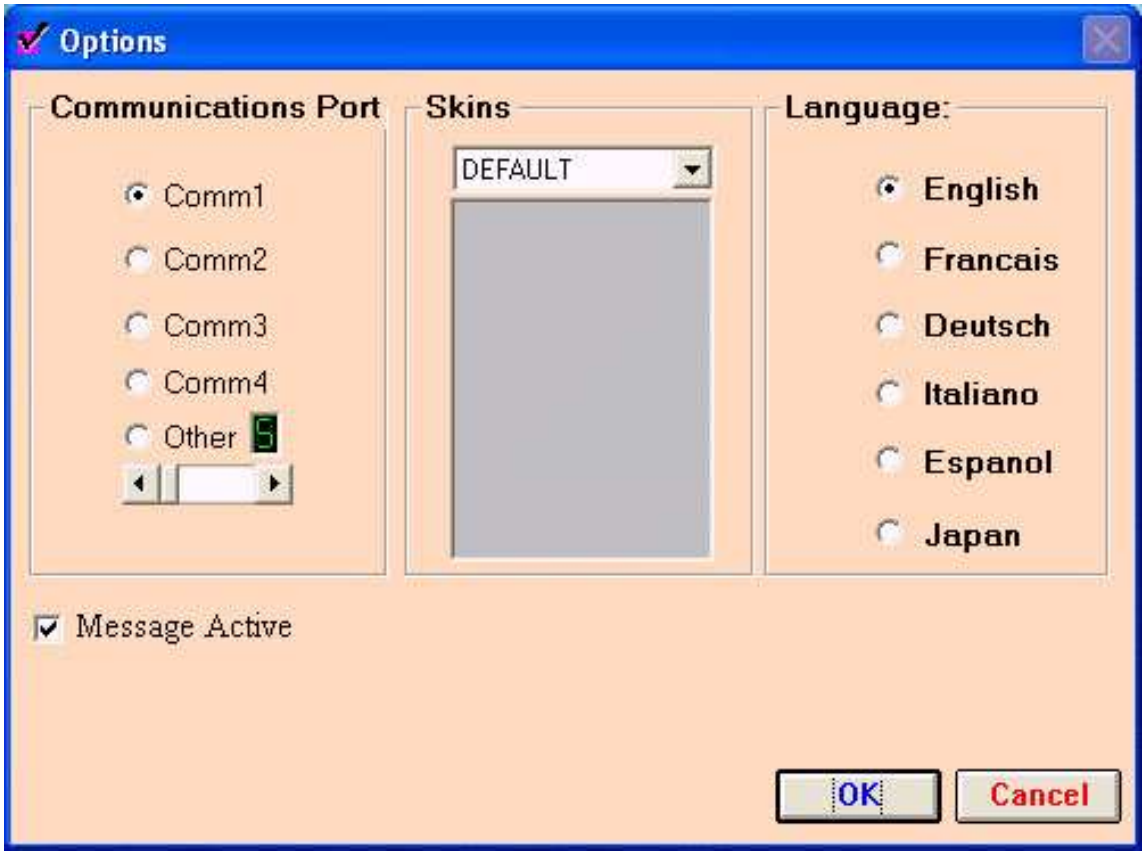
Programming Command Keys :

The layout manager screen is slightly different when a command key, (as opposed to a source selector key), is selected for programming. All previously described functions are the same but there is no SKL box as this is only relevant for source selector keys.



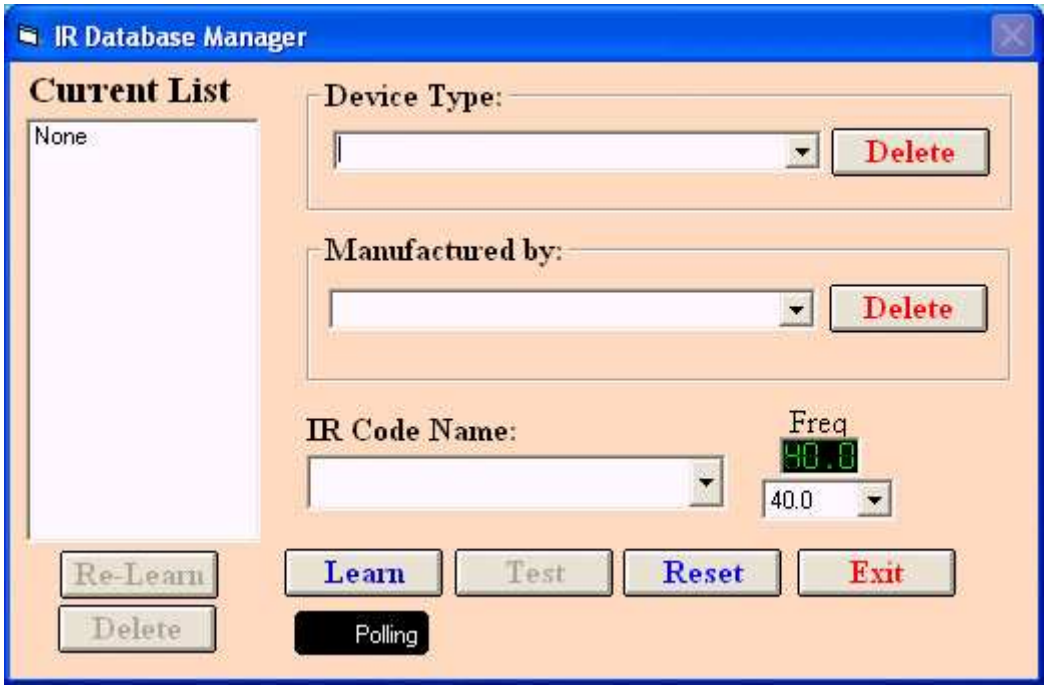
Options

Options Menu : The options menu allows the user to select the PC Communications port to be used, the Skin, (background image) and the language. It also allows determination of whether the marquis message is active (checked) or not. Once these choices have been made press OK activate changes and to return to the main IRCommander screen.



IR Database Manager

This part of the application deals with learning and organizing IR codes for each device to be controlled.



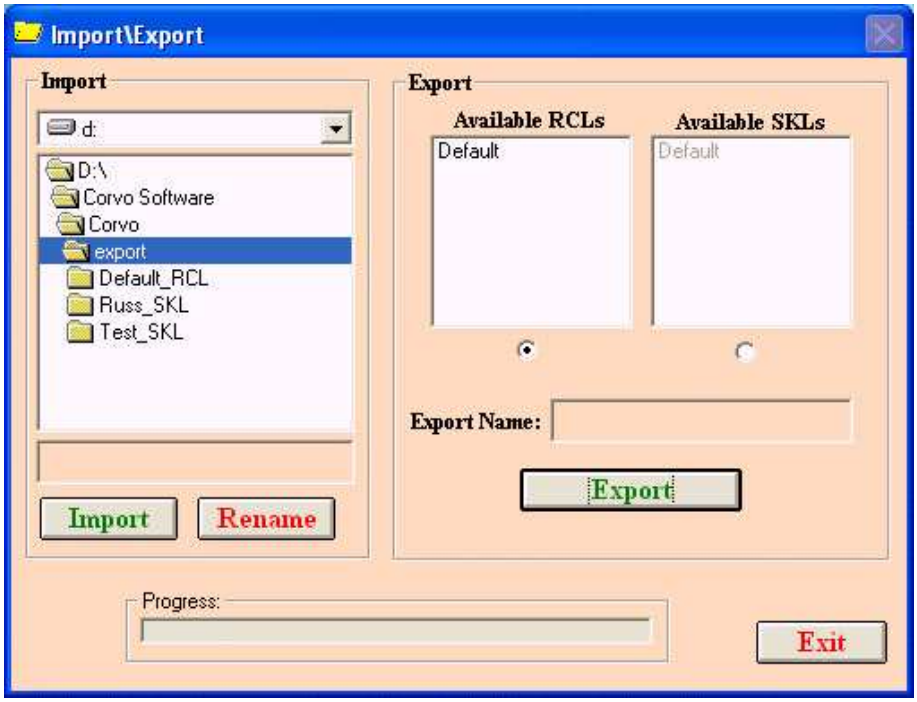
1. **Device Type**: A list of generic device types such as DVD player, Sat decoder, etc, is selected from those already programmed or by typing in a name for a new one.
2. **Manufactured by**: Once again, a manufacturer's name and/or model type can be chosen from a list of previously entered text or a new one can be typed in.
3. **IR Code Name**: This is the name the user wishes to assign to an IR code such as *play* or *stop*, usually corresponding to the name of the code on the original remote control. When the name has been typed the Code-Cap 10 is ready to learn the code from the original remote control. Pressing the Learn button and then following the Code-Cap 10 learning procedure, described in **Getting Started below**, causes the code to be learned. If the learn is successful, the code name will appear after a few seconds in the Current List of IR code names. The Polling button on the screen flashes during the learning procedure.
4. **Test**: The Test button will cause the IR code to be transmitted by the Code-Cap 10, allowing a real validation of the code's integrity.
5. **Reset:** In the unlikely case of lock-up where neither the Learn or Re-Learn button is active, pressing the Reset button will restore the Learn button to active status.
6. **Re-learn**: Doubtful or unsatisfactory codes can be cleared from a code name by first selecting the code name and then pressing the Re-Learn button. This button erases the existing code and begins the learning cycle. The user must immediately relearn the code or a time out will takeover giving a warning message. In that case, simply learn the code again using the Learn button.
7. **Delete**: A code can be deleted from the current list by selecting it and pressing the Delete button.
8. **Freq:** The Code-Cap 10 learning algorithm provides for pre-tuning the IR receive circuit to improve its ability to learn difficult codes. If the user knows the IR carrier frequency of the code to be learned, selecting the nearest frequency from the frequency selector list can improve the chances of success. Generally, a setting of 40.0 KHz is adequate for most IR codes.

9. **Exit:** When code learning and editing is completed, press the Exit button to return to the main RCL operating screen.

Note: The tab key allows easy navigation from box to box in the IR Database manager.

Import/Export

Import / Export : As previously mentioned, it is possible to import or export complete SKLs and RCLs (including all their subsidiary SKLs) to and from the /Export directory. A list of all available RCLs and SKLs appears in their respective export boxes.



1. **Export:** First a choice must be made to export either an RCL or an SKL by pressing the button under their respective boxes. An export name can be assigned that is different than the existing SKL or RCL name. Pressing Export will cause the selected SKL or RCL, with its new name, if the name was changed, to appear as a directory in the Import box. This directory can be transferred to another PC running the IRCommander application using usual PC copy procedure.
2. **Import:** The Import box lists all available SKLs and RCLs which can be imported for use in the application. Again, a selected SKL or RCL can be renamed using the Rename button. When the Import button is pressed, the selected RCL (and its SKLs if any), or the selected SKL, will appear in the available SKL or RCL lists with the new name, if it was changed.
3. **Exit:** When the import and export operations are completed, pressing the Exit button returns to the IRCommander main screen.

It should be noted that macros included in RCL or SKL directories cannot presently be imported or exported. They must be re-built after the import operation is completed.

Getting Started

For best results and ease of operation the setting up and using of the IRCommander software with the Code Cap 10 should be completed in the follow order.

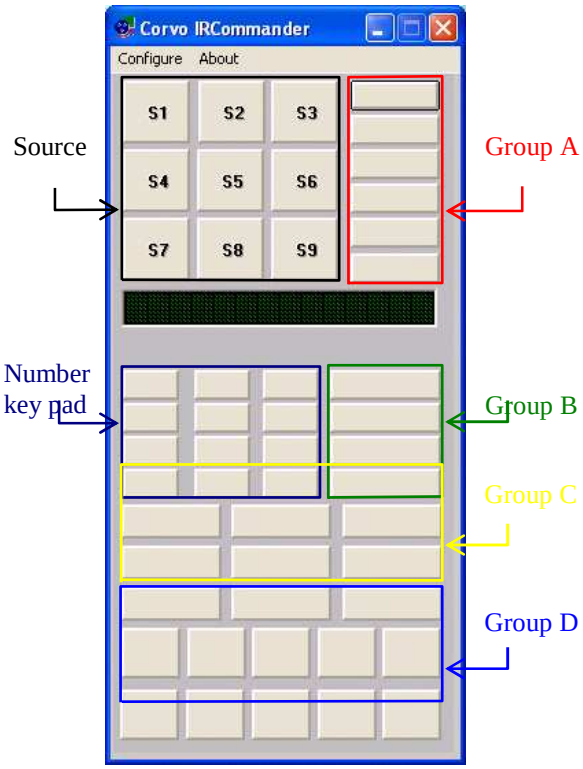
1. Connect the Code-Cap 10 to an available communications port on the PC to be used.
2. Ensure power is applied to the Code-Cap 10
3. Install the IRCommander software.
4. Create a new custom RCL
5. Using the IR Database Manager to learn the IR Commands from the original equipment which you plan to control with the IRCommander software.
    a. Activate the PC software and select the learning function (IR Database Manager).
    b. After making sure that the original remote control containing the IR code(s) to be learned has fresh batteries, place it approximately 2 inches (50 MM) from and pointing at the IR detector window of the Code-Cap 10.
    c. Press the Learn command on the PC followed by pressing continuously the button on the IR remote control to be learned.
    d. As soon as the remote control button is pressed the red IR receive LED begins flashing and within several seconds the green LED will flash once, indicating the code has been learned.
    e. Should the green LED not flash, repeat the procedure trying to move the IR remote control closer or further away from the Code-Cap 10. It may also be helpful to try longer or shorter durations of the original code. Some IR codes, because of their duration, pulse width or carrier frequency are difficult to learn, so some patience and experimentation may be necessary.
6. Using the Layout Manager assign IR commands previously learned to keys as required. Also at this time you can configure the keys as desired with text, key-cap images, and functionalities.
7. Once keys are configured to your requirements exit the Layout Manager.
8. The IRCommander is now ready for use.

Trouble Shooting

Problem	Cause	Solution
Imported RCL or SKL fail to operate device.	Imported RCL or SKL is configured for the wrong communications port for your system.	1. Select configure menu 2. Select options 3. Set to correct communications port.
After configuring and assigning IR commands with Layout manager. Assigned keys do not operate equipment. Same IR commands work correctly when tested in IR Manager.	The Build IR Data function was not completed prior to closing the Layout Manager	1. Select configure menu 2. Select Layout Editor 3. Click the Build IR Data button.
When clicking on a key to send an IR Command a command is sent but is the wrong command for key selected.	Code-Cap 10 and the IRCommander software are no longer in sync.	1. Select configure menu 2. Select Layout Editor 3. Click the Build IR Data button.
When trying to assign an image to a key-cap the key-cap displays **err.**	The selected image may be bad or there was an interruption during the loading of the image.	1. Try assigning the image again. 2. Delete the image and re-create it.
IRCommander seems to be functioning but no IR commands are being sent.	Code-Cap 10 may not be responding.	1. Check to make sure power is present. 2. Check the RS232 cable between the PC and Code-Cap 10 3. Check connections between the IR emitters and the Code-Cap 10
Key does not seem to do anything but it worked previously or from the IR Manager.	The emitter port may not be selected correctly.	1. Select configure menu 2. Select Layout Editor 3. Click on key in question 4. Check to make sure the correct IR Emitter port is selected for the key.
All keys configured with the Layout Manager work except the last one configured.	Save is executed automatically except for the last key configured.	1. Select configure menu 2. Select Layout Editor 3. Re-configure key 4. Click the Apply button 5. Click the Build IR Data button

Annex A
Key-Cap Image Preparation

Images for key-caps are .BMP files, which the user can create from scanners; drawing programs, photo processing programs or any other software that can provide this type of file output. The files are stored in the IRCommander directory of the PC under the Images directory and image group sub-directories, which the user is free to modify by adding, deleting or renaming these image group sub-directories.
It is important to create .BMP files with an image size that corresponds to the size of the key-cap for which the image is intended. IRC has 6 key-cap sizes, each requiring the following image sizes assuming a pixel density of 72 pixels/inch :

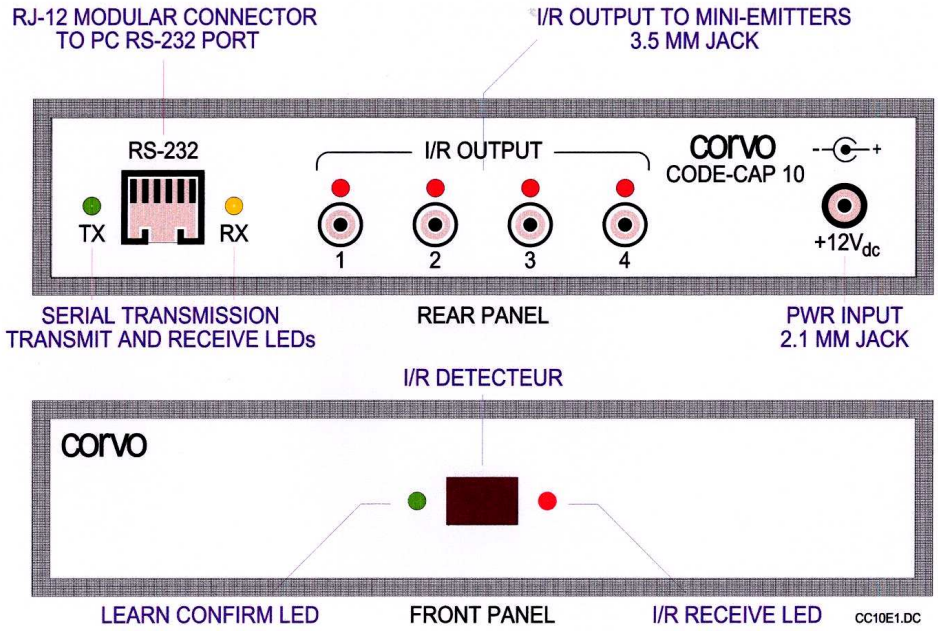


Typically, 24-bit color encoding gives a good result but some experimentation may be necessary for a specific image file.

Key Group	Key Cap Image Size (pixel)	No of Keys
Source	40Hx40W	9
Number Pad Keys	16Hx34W	12
Group A	16Hx58W	6
Group B	16Hx74W	4
Group C	16Hx66W	9
Group D	35Hx36W	10

Typical image files contain from 2K to 5K bytes. The key-cap images included with the program are samples of what can be created with time, patience and experience.
Image files that don't load properly should be deleted and re-created following the above guidelines.

Annex B
Code-Cap 10 IR Code Learn & Storage Module



The Code Cap-10 module

When driven by specific software through a PC serial port, performs the following functions:

- Learning (or memorization) of IR codes when illuminated by the original IR remote control
- Transmitting IR codes through four addressable IR output ports to IR mini-emitters
- Transferring IR code data between the Code-Cap 10 and the PC

Two LEDs on the front panel provide the following information :

- Green Led: Blinks once during the code learning procedure to confirm a successful learn.
- Red Led: Blinks continuously while the IR code to be learned is being transmitted by the original remote control.
- On either side of the RS-232 modular connector, located on the rear panel, the two LEDs provide confirmation of serial transmission in the transmit (green LED) and receive (yellow LED) directions.
- Each of the four output ports has a red LED above the jack to indicate output activity. The jack must be connected to a mini-emitter for the LED to operate.
- Power is supplied to the Code-Cap 10 by a stabilized 12Vdc/100mA power supply equipped with a 2.1 MM jack, center pin positive.

Connections

- The RS-232 port must be connected to an available serial port on the PC using the supplied cable. It may be necessary to configure the software driving the Code-Cap 10 to select the correct serial port.
- The power supply must be connected to a compatible mains power outlet and the Code-Cap 10 power jack.
- Mini-emitters (wired IR diode devices) must be connected to the chosen output ports and placed on the plastic window covering the IR receiver of the device or devices being controlled. (Corvo's product catalog contains many passive and active connection modules, as well as different types of mini-emitters which allow any number of devices to be controlled from a single port).

Technical Specifications

· Code Capacity: 255 codes
· Memory Type: Flash, non-volatile
· Control Interface: RS-232 (or I2C)
· IR Output: 15 mA into single mini-emitters
11 mA into double mini-emitters
· Case Dimensions: 150x100x31 MM (5.9x3.9x1.2 Inches)
· Mass: 230 Grs (8.1 Oz)
· Operating Temperature Range: 0 to 40°C (32 to 104°F)
· Storage Temperature Range: -20 to 60°C (-4 to 140°F)

Packing List

- Code-Cap 10 IR Learn & Storage Module
- Serial Communications Cable
- 12V/130mA regulated power supply (Europe Only)
- IR Commander software on CDRom
- One single Mini-emitter
- User Manual (Word file on the IRCommander CDRom)